REMARKS

By this Amendment, new Claims 49-53 have been added, leaving Claims 1-53 pending. For the reasons stated below, the amendments do not raise any new issues that would require further search by the Examiner, and accordingly it is respectfully requested that the amendments be entered. Reconsideration of the August 13, 2003, Official Action is respectfully requested.

1. Allowed Subject Matter

Applicants gratefully acknowledge the indication in the Official Action that Claims 2-4 and 8 have been allowed. For the reasons stated below, however, it is respectfully submitted that all of the pending claims are patentable.

2. Rejection of Claims 1, 5-7, 17-20, 23, 25, 26, 28-32, 35, 37-39, 42 and 44-47 Under 35 U.S.C. §103

Claims 1, 5-7, 17-20, 23, 25, 26, 28-32, 35, 37-39, 42 and 44-47 stand rejected under 35 U.S.C. §103(a) over U.S. Patent No. 6,155,268 to Takeuchi ("Takeuchi") in view of U.S. Patent No. 4,212,347 to Eastman ("Eastman"). The reasons for the rejection are stated at pages 2-3 of the Official Action. The rejection is respectfully traversed.

Claim 1 recites an aerosol generator comprising, *inter alia*, "a laminate body having a fluid passage therein, *the fluid passage being located between opposed layers of the laminate body which are bonded together* ...." (Emphasis added.) Takeuchi and Eastman fail to disclose or suggest the claimed aerosol generator for the following reasons.

It is asserted in the Office Action that "Takeuchi discloses the aerosol generator claimed, including the laminate body having a fluid passage, the electric resistance heater

plates along the fluid passage, a fluid supply, the laminated layers being sealed with the material such as a plastic film or a metal ... (see also Figures 10 and 11; and column 9, line 35-column 10, line 27)." It is acknowledged in the Official Action that Takeuchi does not disclose or suggest that the opposed layers of the laminated body are bonded together.

However, the Official Action relies on a non-analogous reference, i.e., Eastman, and asserts that "Eastman has a laminate body having a fluid passage therein whose opposed layers are bonded together. In view of Eastman, it would have been obvious to one of ordinary skill in the art to adapt Takeuchi with the laminated body whose opposed layers are bonded together to improve a tight seal between the laminated body."

As explained at MPEP §2141.01(a), a reference cannot be relied on in a rejection under 35 U.S.C. §103 unless that reference is "analogous prior art." To qualify as "analogous prior art," "the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the invention was concerned." *In re Oetiker*, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). As explained below, Eastman does not meet either one of these two requirements.

Takeuchi discloses a flavor-generating device. The embodiment shown in Figure 10 of Takeuchi includes plates 361, 362 and plate heaters 421, 422 defining a liquid passageway 371, and a liquid container 32. The embodiment shown in Figure 11 of Takeuchi includes plates 361, 362 and plate heaters 423, 424 defining a liquid passageway 371, and a liquid container 32. Takeuchi discloses that in the embodiment shown in Fig. 10, the plates 361, 362 are arranged *substantially parallel*, and *spaced apart* from each other a distance sufficient for the capillary force to be exerted therebetween. Takeuchi

further discloses that the plates 361, 362 and plate heaters 421, 422 are spaced apart by the *same distance* (column 9, lines 35-44). Takeuchi further discloses that "the liquid passageway defined by the *substantially parallel plates* is fluid-tightly sealed *at its sides* by sealing material (not shown) such as a plastic film or metal foil so as to prevent the leakage of or the evaporation of the liquid flavor source from the sides of the plates" (emphasis added; column 9, lines 45-50). Thus, Takeuchi discloses that (1) the plates 361, 362 and plate heaters 421, 422 need to be spaced apart; (2) the plates and plate heaters need to be spaced apart by a constant distance across their *entire widths* (i.e., they need to be substantially parallel); and (3) the plates need to be sealed at their *side faces*.

At column 3, lines 51-60, Takeuchi further discloses that the height from the liquid level of the liquid flavor source to the outlet of the liquid passageway is a height or vertical distance that the liquid flavor source may be elevated by capillary force (via the liquid passageway). One of the factors that Takeuchi uses to determine this height is "the gap distance for the *substantially parallel plates*" (column 3, lines 51-57; emphasis added).

Thus, Takeuchi clearly discloses that the plates defining the liquid passageway need to be substantially parallel, and also separated by a gap distance (across their entire widths) that is sufficient for the capillary force exerted between the plates. Takeuchi does not disclose or suggest that the device would be operable if the plates were *not* parallel and *not* spaced apart by a constant gap distance across their entire widths.

Eastman discloses an unfurlable heat pipe designed for use in *outer space*; thus, Eastman is unrelated to the field of aerosol generators. Eastman also is not related to the problem of providing an aerosol generator that produces an aerosol from a liquid by

vaporizing the liquid. Thus, Eastman does not qualify as analogous prior art with respect to the claimed subject matter. Therefore, the rejection should be withdrawn.

Moreover, Eastman provides no motivation to modify Takeuchi's aerosol generator as asserted in the Official Action. As shown in Figure 1 of Eastman, the heat pipe comprises a lower sheet 14 and a heat conductive upper sheet 12. The sheets 12, 14 are highly flexible and designed to provide little resistance to coiling of the heat pipe (column 2, lines 57). The sheets 12, 14 are arranged with their inside surfaces in contact at edges 16 and 18 to define an enclosed volume 19 and capillary channels 20, 22. A heat exchange liquid 24 is transported from the condenser section to the evaporator section of the heat pipe in the capillary channels 20, 22 by conventional capillary forces (see column 2, lines 44-53). Eastman explains that this "particular construction of the bonded edges of the heat pipe provides its gravity independent and bi-directional heat flow characteristics" (column 1, lines 60-62). That is, the two sheets are attached together to form the crevice-like space at the junction of their facing surfaces to provide a capillary channel to transport liquid along the heat pipe.

Eastman provides no motivation to modify Takeuchi's flavor-generating device to achieve the aerosol generator recited in Claim 1, which includes "a laminate body having a fluid passage therein, with the fluid passage being located between opposed layers of laminate body *which are bonded together*" (emphasis added). In Takeuchi's device, the plates 361, 362 and 421, 422 must be parallel to each other in order to have a constant gap between them across the width of the plates. Moreover, the constant gap distance affects the vertical distance that the liquid flavor can be elevated via the liquid passageway.

Eastman's unfurlable heat pipe is not an aerosol generator. Thus, one skilled in the art would not have looked to Eastman regarding problems that occur in aerosol generators. Also, in Eastman's heat pipe construction, the facing surfaces of the upper sheet 12 and lower sheet 14 are not maintained at a constant gap distance, as needed in Takeuchi's device. In fact, Eastman discloses that "*regardless of how much the planar surfaces may separate in their central regions*, the edges always maintain some capillary flow" (see column 2, lines 2-4). Eastman discloses that the heat pipe is not designed to maintain the facing surfaces of the upper sheet 12 and lower sheet 14 at a fixed, constant gap distance. In fact, the heat pipe is flexible and designed to provide capillary flow at *different separations* between the surfaces. The separation distance should not be fixed in Eastman's device, as is needed in the Takeuchi device, because this would prevent the Eastman device from achieving its intended principle of operation. In light of the contrary need to maintain a constant gap distance between the plates in Takeuchi's device, Eastman teaches directly away from the modification of Takeuchi asserted in the Official Action.

For the foregoing reasons, the aerosol generator recited in Claim 1 is patentable over the combination of Takeuchi and Eastman.

Claims 5-7, 17-20, 23, 25 and 26 depend from Claim 1 and, accordingly, also are patentable over the combination of Takeuchi and Eastman for at least the same reasons that Claim 1 is patentable. Moreover, these dependent claims recite additional features that are not suggested by the combination of Takeuchi and Eastman. For example, Claim 5 recites that "the layers are bonded together by an adhesive." Takeuchi does not bond such layers together. Claim 6 recites the feature that "the layers are metallurgically bonded together."

Takeuchi also does not suggest the combination of features recited in Claim 6. Eastman provides no motivation to modify Takeuchi's device to either adhesively or metallurgically bond together the plates forming the liquid passageway 371. Accordingly, the aerosol generator recited in Claims 5 and 6 is patentable over the cited references.

Claim 25 recites that "the heater has a width which is less than a width of the laminate." In contrast, the heater plates 421, 422 in Takeuchi's device have the same width as the plates 361, 362, i.e., the same width as the laminate. Takeuchi does not suggest that the heater plates may have a width less than the width of the plates 361, 362, i.e., less than the width of the liquid passageway. Eastman provides no motivation to modify Takeuchi to achieve the aerosol generator recited in Claim 25, which accordingly is patentable.

Claim 26 recites that "the opposed layers are bonded together at locations separated by the fluid passage." Takeuchi does not bond together the plates 361, 362 defining the liquid passageway, but rather seals the edges of the plates. Eastman provides no motivation to modify Takeuchi to achieve the aerosol generator recited in Claim 26, which accordingly also is patentable.

Independent Claim 28 recites an aerosol generator comprising, *inter alia*, "a laminate body having a fluid passage therein, the fluid passage being located between *opposed layers of the laminate body which are bonded together* ...." (Emphasis added.) The aerosol generator recited in Claim 28 also is patentable over Takeuchi and Eastman for reasons stated above. Claims 29-31 depend from Claim 28 and, accordingly, also are patentable over the combination of Takeuchi and Eastman for at least the same reasons that Claim 28 is patentable.

Independent Claim 32 recites an aerosol generator comprising, *inter alia*, "a laminate having a fluid passage therein located between *opposed layers of the laminate which are bonded together, the fluid passage having a width which is less than a width of the opposed layers* ...." The aerosol generator recited in Claim 32 also is patentable over the combination of Takeuchi and Eastman for reasons stated above.

In addition, Takeuchi and Eastman fail to suggest modifying Takeuchi's device so that the liquid passageway 371 has a width *less than* a width of the opposed layers. As explained above, Takeuchi's liquid passageway 371 is shown to have the *same width* as the plates in FIGs. 10 and 11. Eastman provides no motivation to modify Takeuchi's device to achieve the aerosol generator recited in Claim 32, which accordingly also is patentable over Takeuchi and Eastman. Claims 37 and 38 depend from Claim 32 and thus also are patentable over the combination of Takeuchi and Eastman for at least the same reasons that Claim 32 is patentable.

Independent Claim 39 recites an aerosol generator comprising, *inter alia*, "a laminate having a fluid passage therein located between *opposed layers of the laminate which are bonded together, the opposed layers having bonded surfaces which are closer together than are surfaces of the opposed layers defining the fluid passage* ...." (Emphasis added.) For reasons stated above, Takeuchi and Eastman fail to disclose or suggest a laminate including opposed layers that are bonded together and define a fluid passage therebetween, much less opposed layers having bonded surfaces which are closer together than are surfaces of the opposed layers that define the fluid passage. Accordingly, the aerosol generator recited in Claim 39 also is patentable over the combination of Takeuchi

and Eastman. Claims 44 and 45 depend from Claim 39 and, accordingly, also are patentable.

Independent Claim 46 recites an aerosol generator comprising, *inter alia*, "a laminate having a fluid passage therein located *between opposed layers of the laminate which are bonded together, the opposed layers including opposed depressed surfaces defining the fluid passage therebetween* ...." The aerosol generator recited in Claim 46 also is patentable over Takeuchi and Eastman for reasons stated above. Takeuchi discloses plates having *flat* surfaces that face each other. Eastman provides no motivation to modify Takeuchi's device to include opposed layers having opposed *depressed* surfaces that define a fluid passage between them.

Independent Claim 47 recites a method of making an aerosol generator, which comprises "*forming a laminate body having a fluid passage therein by bonding together opposed layers*, the fluid passage being located between the opposed layers ...." (Emphasis added.) For reasons stated above, Takeuchi and Eastman fail to disclose or suggest a laminate body including opposed layers bonded together and defining a fluid passage between them. Accordingly, the aerosol generator recited in Claim 47 also is patentable over Takeuchi and Eastman.

Therefore, withdrawal of the rejection is respectfully requested.

3. Rejection of Claims 9, 21, 22, 24, 33, 34, 36, 40 and 41 Under 35 U.S.C. §103

Claims 9, 21, 22, 24, 33, 34, 36, 40 and 41 stand rejected under 35 U.S.C. §103(a) over Takeuchi in view of Eastman, and further in view of U.S. Patent No.

5,743,251 to Howell et al. ("Howell"). The reasons for the rejection are stated at pages 3-4 of the Official Action. The rejection is respectfully traversed.

Claims 9, 21, 22 and 24 depend from Claim 1. Howell fails to cure the deficiencies of Takeuchi and Eastman regarding the aerosol generator recited in Claim 1. Namely, Howell discloses an aerosol generator including a tube 23, and a heater 27 positioned to heat liquid in the tube to produce vapor. Howell does not suggest modifying Takeuchi's flavor generating device to include "a laminate body having a fluid passage therein, *the fluid passage being located between opposed layers of the laminate body which are bonded together* ....", as recited in Claim 1. Accordingly, the aerosol generator recited in Claim 1 is patentable over the cited combination of references.

Claims 9, 21, 22, and 24 recite additional features that are neither disclosed nor suggested by the cited references. For example, Claim 21 recites the feature of "at least one of a valve and a pump arranged to control flow of the fluid from the fluid supply to the fluid passage." In Takeuchi's device, the liquid flavor is under atmospheric pressure (column 3, lines 51-57, and column 4, lines 15-23). Eastman does not disclose any valve or pump. Howell does not suggest modifying Takeuchi to include a valve or pump because such modification would change the principle of operation of Takeuchi's device, and thus would not have been *prima facie* obvious. *See* MPEP §2143.01 at page 2100-127, right column (Rev. 1, Feb. 2003). Accordingly, the aerosol generator recited in Claim 21 is patentable.

Claim 22 recites the feature that "the fluid supply comprises a chamber, the aerosol generator further comprising a piston operable to compress fluid in the chamber to supply

the fluid from the fluid supply to the fluid passage." Eastman and Howell provide no motivation to modify Takeuchi's device to include any such piston. Accordingly, the aerosol generator recited in Claim 22 also is patentable.

Claims 33, 34 and 36 depend from Claim 32. Howell fails to cure the deficiencies of Takeuchi and Eastman regarding Claim 32. The aerosol generator recited in Claims 33 and 34 is patentable for the reasons that Claim 32 is patentable, as well as for reasons stated above regarding Claims 21 and 22, respectively. Claim 36 also is patentable for at least the same reasons that Claim 32 is patentable.

Claims 40 and 41 depend from Claim 39. Howell fails to cure the deficiencies of Takeuchi and Eastman regarding Claim 39. Moreover, Claims 40 and 41 are patentable for further reasons stated above for Claims 21 and 22, respectively.

Therefore, withdrawal of the rejection is respectfully requested.

4. Rejection of Claims 10-16, 27 and 48 Under 35 USC §103

Claims 10-16, 27 and 48 stand rejected under 35 U.S.C. §103(a) over Takeuchi in view of Eastman, and further in view of U.S. Patent No. 6,586,110 to Obeshaw ("Obeshaw"). The reasons for the rejection are stated at page 4 of the Official Action. The rejection is respectfully traversed.

Independent Claim 10 recites a method of making an aerosol generator, which comprises, *inter alia*, "arranging a mandrel between opposed layers of a laminate, bonding the opposed layers together, and forming a fluid passage by removing the mandrel, wherein the aerosol generator comprises: *a laminate body having the fluid passage located between the opposed layers of the laminate which are bonded together* ...." (Emphasis added.)

Takeuchi, Eastman and Obeshaw fail to suggest the combination of features recited in Claim 10.

It is asserted in the Official Action that Obeshaw discloses a method of making a contoured metal structure having a removable mandrel disposed between a laminate body to form a desired shape or defining a space. It is further asserted that it would have been obvious to adapt Takeuchi as modified by Eastman with a removable mandrel to form desired shapes. Applicants respectfully disagree with these assertions.

Takeuchi and Eastman fail to suggest "a laminate body having the fluid passage located between the opposed layers of the laminate which are bonded together," as recited in Claim 10. Takeuchi discloses a structure including opposed parallel plates spaced apart from each other along their entire widths to define the fluid passageway. Eastman teaches away from Takeuchi's parallel plate construction.

Obeshaw also provides no motivation to modify Takeuchi's device such that the plates defining the fluid passageway are parallel to each other across their entire widths. In the different shapes shown in Figure 3 of Obeshaw that include channels extending along the length of the structural members, the opposed layers are not parallel to each other along their entire widths. Accordingly, the aerosol generator recited in Claim 10 is patentable over the combination of Takeuchi, Eastman and Obeshaw.

Claims 11-16 depend from Claim 10 and, accordingly, also are patentable over the combination of Takeuchi, Eastman and Obeshaw for at least the same reasons that Claim 10 is patentable.

Claim 27 depends from Claim 1. Obeshaw fails to cure the deficiencies of Takeuchi and Eastman regarding the method recited in Claim 1. Accordingly, Claim 27 is also patentable for at least the same reasons that Claim 1 is patentable.

Independent Claim 48 recites a method of making an aerosol generator, which comprises, *inter alia*, "arranging a mandrel between opposed layers of a laminate; bonding the opposed layers together; and forming a fluid passage between the opposed layers by removing the mandrel." For reasons stated above, Eastman and Obeshaw provide no motivation to modify Takeuchi's device to provide a laminate having opposed layers that are bonded together, as recited in Claim 48. Accordingly, the method recited in Claim 48 also is patentable.

Withdrawal of the rejection is respectfully requested.

5. New Claims

New Claim 49 depends from independent Claim 28; Claim 50 depends from independent Claim 32; Claim 51 depends from independent Claim 39; Claim 52 depends from independent Claim 46 and Claim 53 depends from independent Claim 47. Claims 49-53 also are patentable for at least the same reasons as the independent claims that they depend from.

Moreover, because Claims 28, 32, 39, 46 and 47 are patentable for reasons stated above, entry of dependent Claims 49-53 does not raise any new issue that would require further search. Accordingly, entry of the new claims is respectfully requested.

For the foregoing reasons, it is submitted that the application is in condition for allowance and such action is earnestly solicited.

Respectfully submitted,

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